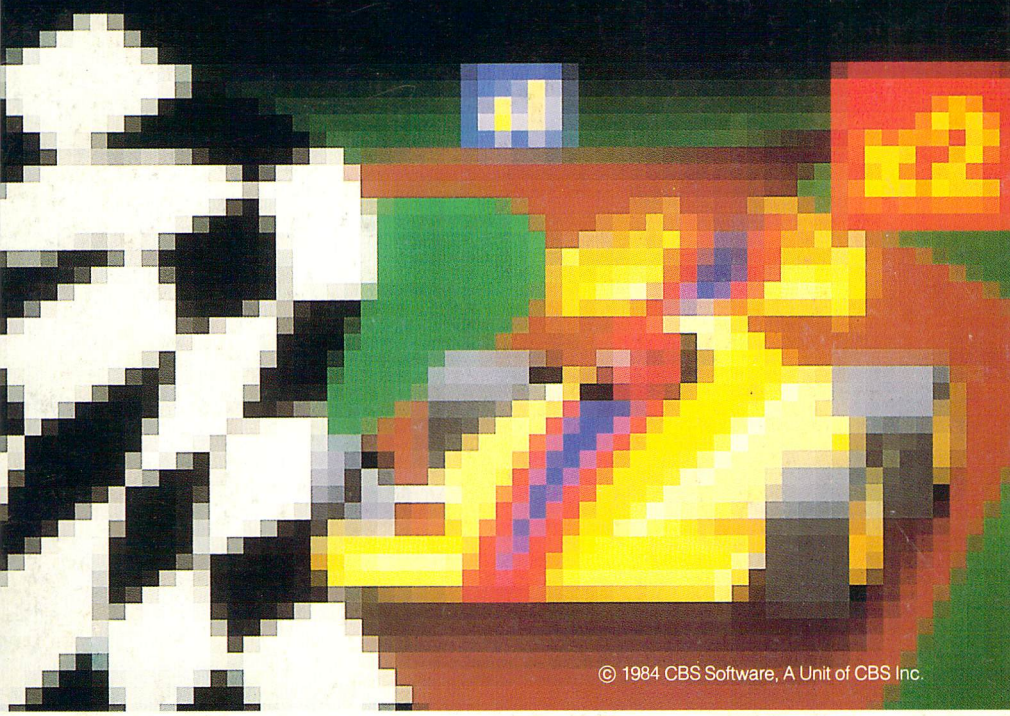
Math Mileage™

Build basic math skills as you race against the clock!

Game Play Manual



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Make Tracks with Math Mileage!

Fun and action await you in this exciting road rally that's also educational! Math problems provide the fuel that speeds you and up to three of your friends along a twisting, fork-filled race course toward your goal. So take some time to familiarize yourself with how the game works (you may need your parents' help) and then get ready...get set...and GO with MATH MILEAGE!

Starting

The Reference Card included with MATH MILEAGE contains all the information needed to set up your computer, select number of players and choose skill level. It also helps you get started enjoying all the fun of MATH MILEAGE right now! So look at the Reference Card now and come back to this manual later for all the details of the game.

Object of the Game

The object of MATH MILEAGE is to steer your formula race car through the countryside, choosing the route that will get you to your goal in the shortest and fastest way possible.

There is no such thing as a wrong route in MATH MILEAGE; you will always reach your goal no matter how many forks you end up taking. The key to success is trying to take the *fewest* number of forks.

Formula Race Cars

Up to four drivers each have their own formula race car and only one car at a time may race through each course. Each player's car has its own color.

Use your Joystick Controller to drive your car along the course. Hold the Joystick with the red button to your upper left toward the screen. Push the Joystick forward; your car will move ahead. To steer your car, push the Joystick to the right or left. To stop, release the Joystick. You cannot move backwards or turn around.

Developed and programmed by Marcia M. Burrows.
Program © 1984 K-Byte

Goals

Each race that you run has its own goal. Goals are selected at random by the computer and are based on the skill level you're playing on. The goal for each race is located in the lower right corner of the screen.

Ready...Set...

Before you begin, take a few seconds to note the goal and plan out your route. Pushing up on the Joystick at this time will produce no effect. The car will not move until GO! appears at the bottom of the screen.

Go!

When GO! appears, you may begin to move your car along the course. The clock in the lower left corner of the screen will begin keeping track of how much time you use in getting to the goal.

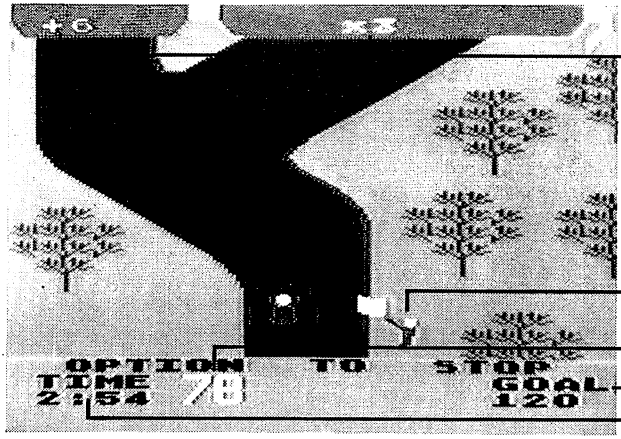
Driving

Starting at zero, you drive to your goal by selecting the left or right branch of the many forks in the road you will encounter. The first of these forks is plainly visible at the start of the race. Here you must make a decision. Which branch will you take? The road signs over each branch indicate the mathematical operation that branch represents.

After selecting one operation, steer your car in that direction. As the car passes underneath the operation road sign, you'll hear a short burst of music. At the same time, the result of your selection will appear at the bottom of the screen. For instance, if you start at zero and select a +10 branch, the equation at the bottom of the screen would read "0 + 10 = 10."

After each choice, your car breaks through a billboard showing how far along the route to your goal you've travelled. In our example above, the billboard your car breaks through would display "10."

After you break through the billboard, you will come to another fork in the road. Here you must again decide which branch to take, the left or the right. This procedure continues until you reach the goal.



Operational Road Sign

Flagman

Current Total

Goal

Time Used

Skill Levels

There are three skill levels in MATH MILEAGE. We strongly suggest that new players, as well as very young ones, start off with Level 1 and work their way up to Level 3 with practice. Furthermore, at the end of each race, on all levels, you may opt to increase the challenge by driving the same route at night.

Level 1

Players have the choice between only two operations, +10 and +1. +10 is always over the left branch and +1 is always over the right one. Goals are randomly selected and range from 14 to 140. They require a minimum of 5 to 14 forks to reach. Very little strategy is involved on Level 1; emphasis is placed on understanding place value.

Levels 2 and 3

Players have the choice between one addition and one multiplication operation. On Level 2 the addition operation is always +10. On Level 3, it's randomly selected from between 2 and 9. The multiplication operation on both levels is randomly selected from between 2 and 5. All operations switch randomly from left to right branches as new forks are approached. Careful attention, therefore, should be paid to steering. Goals increase by ten from 100 to 390 and are selected randomly. While it is possible that a goal may appear more than once, the operations available to choose from to reach that goal will be different.

Overshooting the Goal

To finish the race, you must reach the goal *exactly.* If you select an operation which changes your total to a number larger than the goal, your car will automatically be rerouted; you will be "sent back" to approach the last fork again. To accomplish this, your car passes under a black road sign which will either subtract a number from your total (Level 1) or divide your total by a number (Levels 2 and 3). You must then select the correct branch and continue on toward the goal.

Crossing the Finish Line

When you reach the goal *exactly,* you must keep on driving until you break through the final billboard and pass the checkered flag. In other words, *keep on driving until you no longer can proceed.* The clock will stop, you'll be shown how many forks you used and then you'll zip to the Recap Screen.

The Recap Screen

While one objective of MATH MILEAGE is to arrive at the assigned goal, a further objective is to do so as fast as possible by taking the route with the fewest forks. The Recap Screen provides the information and the options to help you do just that.

Fewest Number of Forks

The Recap Screen displays the fewest number of forks that can be taken to get to the goal. The statistics (time used and number of forks taken) for the race you just ran are displayed in white. Previous race statistics for the same course are displayed in blue.

Repeat Races and New Races

You must run each race at least twice before attempting a new race with a new goal. This helps reinforce the mathematical operations involved in each race. If you're the only driver racing, then your next run may be started immediately, and you can select either day or night driving. If other drivers are racing, however, each one of them must first complete his/her race before you can begin your next run. Each driver will have the same goal in his/her race that you had in your race.

Once all drivers have completed their second runs, the Recap Screen will offer you the option of running the same race again or moving on to a new race with a different goal. If you select to run the same race again, the Recap Screen will erase the previous statistics and each driver will again get two attempts to achieve the goal.

If a new race is selected, the title screen will appear and you'll have a chance to change skill levels or add or subtract players before starting your first race.

Scoring
Scoring is based on statistics for races as they are recorded on the Recap Screen. Points accumulate; they never decrease. 20 points are scored for finishing a race with bonus points awarded as follows:

Finishing a race in the fastest time recorded so far	30 points
Finishing a race by taking the fewest number of forks recorded so far	50 points
Finishing a race by taking the fewest number of forks possible	100 points

Driving at night doubles all of the above point values.

Night Driving

For greater challenge and double points, select to run your race at night. In night driving, the billboards that you break through along the route do not show your current total. Also, the equation that normally appears at the bottom of the screen does not show up. Therefore, you must do mental arithmetic as you drive and keep your current total in your head.

If you should forget what your current total is, all is not lost. You can find out "where you are" by flashing your headlights at a billboard. To do this you must stop your car as you approach a billboard (be careful not to go through it yet) and press down on the red button. This will light up the billboard and reveal your current total. But be warned: doing this will cost you valuable time.

Night driving may be selected on any level, but should not be attempted until you feel comfortable with day driving.

Special Features

Flagmen

Flagmen appear along the route to warn you of hazardous road conditions which may delay you in reaching the goal. The color of each flag indicates the following:

Green	You may select either branch of the approaching fork without overshooting the goal.
Yellow	Caution; selecting one of the branches of the approaching fork will cause you to overshoot the goal or multiply by zero.
Red	You've overshot the goal or multiplied by zero. Prepare to be rerouted.
Checkered	You've reached the goal and finished the race!

Important: Flagmen do not appear at night.

Music

Every burst of music heard when driving serves as a reminder that each fork passed is being counted for scoring purposes. This count of forks includes errors like overshooting the goal and multiplying by zero (which results in a total of zero). Even a rerouting operation that you may have to take counts as a fork.

Sparkle

If you finish your race in the fewest number of forks possible, the road sign displaying this number will be gold and will sparkle in honor of your perfect run.

Off-Road Billboards

If you make an error like overshooting the goal or multiplying by zero, the billboard showing your total will appear on the side of the road and will not be broken through. To light these billboards at night, your car must be stopped well before passing beside them.

Stopping a Run

A run may be stopped at any time during a race by pressing the key indicated on the Reference Card. When this key is pressed, the Recap Screen will appear immediately and your run will be recorded as "Run Stopped." Levels 2 and 3 alert you to this option if you make a serious error in strategy that prolongs your getting to the goal for a long period of time and many forks.

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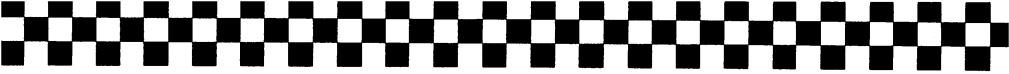

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